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# ON GENIUS:

IN WHICH

IT IS ATTEMPTED TO BE PROVED,

THAT THERE IS

NO MENTAL DISTINCTION AMONG MANKIND.

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BY W. GRISENTHWAITE,

AUTHOR OF A "REFUTATION OF T. PAINE'S AGE OF REASON;" AND A  
"NEW THEORY OF AGRICULTURE," SECOND EDITION.

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"Fancy next  
Her office holds; of all external things  
Which the five watchful senses represent  
She forms imaginations, aery shapes,  
Which reason joining or disjoining, frames  
All what we affirm or what deny, and call  
Our knowledge or opinion."

MILTON.

"Sensus, de quibus loquimur, quinque sunt; visus, auditus, odoratus, gustus, et tactus. Hi aut in corpore sunt, aut circa corpus, solisque sunt caducis corporibus familiares. Anima vero, omni corpore, ipsa diviniore est. Multo magis anima majoris est majestatis, quam ut sensu egeat." MACROBIUS.

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STATIONERS' COURT;  
AND S. BENNETT, NOTTINGHAM.

MDCCCXXX.





TO THE  
PRESIDENT, VICE-PRESIDENTS,  
AND  
MEMBERS,  
OF THE  
LITERARY AND PHILOSOPHICAL SOCIETY,

*Bromley House, Nottingham,*

THE FOLLOWING ESSAY,

READ AND DISCUSSED AT ONE OF THEIR MEETINGS,

*December, 1827,*

IS MOST RESPECTFULLY INSCRIBED,

BY

THE AUTHOR.



## ON GENIUS:

IN WHICH IT IS ATTEMPTED TO BE PROVED, THAT  
THERE IS NO *MENTAL* DISTINCTION AMONG  
MANKIND.

---

THE human mind is never more profitably, and seldom so interestingly engaged, as when measuring its own powers; and yet there are few subjects which less frequently occupy its speculations. "Know thyself," so important a duty to man, considered as a moral and responsible agent, is almost equally important to him as a rational and intelligent being. Nor can it for a moment be believed, that the high capabilities of our nature were conferred upon us to remain unknown in their extent, any more than to be wasted in unimproved sterility. Indeed the successful cultivation of the mind depends upon a knowledge of its powers; whilst to fix its boundaries with accuracy, is to encourage rational industry, and repress extravagant hope. Even animals are prompted by instinct to try their powers. It forms a considerable part of their natural education; and hence, probably, results the almost unerring certainty

with which they accomplish whatever they undertake. And how, otherwise, can man tell with what difficulties he may engage, or what objects he may attempt, who has not previously ascertained, by this mental investigation,

“Quid ferre recusent,  
Quid valeant humeri.”

We may, perhaps, find some apology for the general neglect of this intellectual self-examination in the commonly imagined difficulty of the subject, and the dim light which philosophy has thrown over it. “The eye sees not itself but by reflection from some other thing;” and there are few objects in nature calculated to throw back the light of the mind upon itself. Matter is the subject of its habitual contemplation. We are, however, encouraged by that great metaphysician, Locke, to set our minds before us, and to examine them with the same care, and by the same means, as we do the world of external nature around us.

In this essay I do not purpose to institute a complete survey of the mind, but shall confine my enquiries simply to the existence, or non-existence of that power, property, or accident of it which is called Genius.

In all ages, and in all countries, some individuals have been distinguished above the rest of mankind by superior powers of intellect, as some spots on the globe have been more fertile than others; and both have been supposed to be the boon of nature:

whilst the labours of the one, like the spontaneous productions of the other, are believed to excel whatever cultivation can produce in ordinary soils, or in ordinary minds.

Without ranging over the vast page of History, in search of examples to illustrate this truth, it will suffice for my present purpose, to select a few instances from the records of ancient Greece, as no country affords so rich a choice; and the examples themselves are familiar to us all.

There Homer produced the most perfect Poem that the world has ever seen, without any aid from example, or any assistance from precept; and left Aristotle little else to do in composing his Poetics, and Longinus his treatise on the Sublime, than to reduce the structure of it to rules and principles. Like the works of nature, time and art can add nothing to it but what is superfluous, nor retrench any thing but what is necessary. Critics after Critics have exhausted themselves in praises of its beauties; whilst fresh beauties have been discovered by succeeding Critics, to keep alive the theme of admiration. Even the "genus irritabile vatum," labourers in the same field of exertion, have regarded it without envy, because it seems placed beyond competition; whilst all the rest of mankind, as with one voice, have hailed it as the offspring of Genius.

What Homer thus accomplished in Poetry, Phidias and Praxitiles effected in Sculpture; which



may not unaptly be called another pen of the imagination.

When Phidias bids the marble block disclose  
 Some form divine, where heaven and grace repose;  
 How charms the eye the half-existing stone!  
 Which, to have life, needs genial warmth alone.—  
 Lo! from the lip there steals a silent breath,  
 Almost too vital to pertain to death;  
 An eye that cheats the sense, and seems to roll,  
 Intelligent, conversing with the soul:  
 Whether, with softest touch of gentle love,  
 A Venus\* bids the tender passions move;  
 To whom consenting hearts submissive kneel,  
 And, scarce idolatrous, confess they feel;  
 Or angry Jove\*, with thunder in his hand,  
 Prepares to shake a discontented land;  
 Alike the magic marble——

*Extract from an Address written by the Author of this Essay,  
 in the Year 1818.*

In these works were displayed a fidelity of form, a grace of position, an indescribable "*felicitas curiosa*" of expression, a supernatural dignity of thought, almost materialized; which conferred an honour upon the age and country in which they were produced; objects of praise and wonder to all succeeding generations; and models of taste, beauty, truth, and sublimity, which it has been the highest ambition of mankind to imitate.

In Eloquence, Demosthenes seems to have exhausted language of all its most beautiful arrange-

\* The Venus Thalassia, and Jupiter Olympius of Phidias, are here alluded to.

ments, and to have clothed reason in every variety of argument; whilst the thunder of his oratory, equally the theme of admiration, was, from its evanescent nature, doomed to cease with the tempest which gave it birth.

In Painting and Music we have now little remaining, more than the testimony of antiquity; but what that testimony has declared of an Apelles, an Orpheus, and a Terpander, is such as to convince us that the same consummate excellence had been reached in both; whilst, in Architecture, more than two thousand years have rolled away without the addition of almost any thing to it. The very names of the different orders are still Grecian; and the classical soil is still broken up in search of the fragments of ruined temples, and mouldering columns, to guide the hand, and chasten the judgment of modern artists. Unfortunately the authors of these splendid monuments of art perished before their labours, or their names would have been equally the subjects of veneration. To close this imperfect, but brilliant series, Euclid, in abstract science, has presented us with such a masterpiece of consecutive deduction as the world cannot parallel. Invention in all these instances appears to have been rendered barren by early and prolific production.

All these examples of excellence have ever been regarded by mankind as the fruits of minds specially endowed by nature; and the endowment



itself has been denominated Genius. Unhappily the world, impressed by this false notion, has ever shrunk back from their ingenuous labours, as if to cherish hope was madness; since disappointment only could reward toil. As well attempt to follow the eagle without wings, as the daring steps of Genius without a kindred spirit; and such, to the present hour, are the fatal effects of this common, this inveterate, and I fear, incorrigible error. If some few have since raised themselves to the same elevation, it has been by that noble impulse of mind, which taught them that "what man had once done, man might again do." It was an assertion of the inalienable privileges of man.

But, in confirmation of these desponding opinions, which chain down the buoyant spirit to the earth, let us turn to the sentiments entertained by some of the wisest of mankind respecting Genius. We shall find nothing to encourage us. "Genius," says Dr. Johnson, "consists in great natural powers, directed to some particular end;" where, by "natural powers," we may understand him to mean, mental endowments, as contradistinguished from those acquired powers, which are the result of mental discipline.

In language but little varied, and the same in sentiment, Addison observes, that "among great Geniuses, those few draw the admiration of all the world upon them, and stand up as the prodigies of mankind, who, by the mere strength of their

natural parts, and without any assistance of art or learning, have produced works that were the delight of their own times, and the wonder of posterity." This is the *ne plus ultra* claim of Genius. But I hope, in the course of this Essay, to prove it as unfounded as it is extravagant.

Pope, in one of his didactic poems, thus admonishes the young adventurer in rhyme ;

"Be sure yourself and your own strength to know,  
How far your learning, taste, and *genius* go ;  
Launch not beyond your depth."

In which it is very clear that he meant by "Genius" some natural powers of mind distinguishable from "learning and taste;" both of which he has here enumerated as among the pre-requisites of the Poet. And this opinion is farther strengthened by the words of the same author in another place, where he says,

In Poets as true Genius is but rare,  
True taste, as seldom, is the critic's share ;  
Both must alike from *heaven* derive their light,  
These *born* to judge, as well as those to *write*.

Here we can complain of no ambiguity, for the Bard acquaints us, that Genius, like the Ganges, spoken of by the Oriental Poets, has its origin in heaven. When one page of an author thus furnishes a comment upon another, it renders the text of both too clear to be questioned.

Cicero defines, or rather describes Genius in the following very strong, and almost poetical terms: "*Natura ipsa valere, et mentis viribus excitari, et quasi divino quodam spiritu inflari;*" and in his admirable work, de Oratore, he speaks of it in the same tone, and calls it "*divina vis ingenii*. Whilst Horace, as if he had imbibed the same spirit, breathes almost the same expressions, and identifies "ingenium" with the "*mens divini*:" and finally, to complete these authorities, our Poet Akenside, as if translating both, declares

From heaven descends  
The flame of Genius to the human breast.

To these quotations, which might be almost indefinitely multiplied, may be added the familiar fable of the Hare and Tortoise, which, whilst it offers a lesson to encourage diligence, also shows, that there *is* an *ability* which is *peculiar* to *Genius*.

Thus we perceive that among the learned and the vulgar a concurrent opinion prevails, and has ever prevailed, that some men more than others, are endowed with "the great natural powers" of Johnson, or the "strong natural parts" of Addison; with the "divine spirit" of Cicero, or the "flame from Heaven" of Akenside: all of which are varied phrases, expressive of that quality of mind which is, by common consent, denominated Genius.

It would have greatly benefitted the cause of truth, and have rendered the shackles of error more



tolerable, if they who imposed them had pronounced their judgment in conjunction with the evidence upon which it is founded. We should then have seen by what perversion of reason they had concluded upon this fatal doctrine, which "poisons hope and deadens young desire;" and we might then also have entertained a better chance of emancipation from its thralldom.

In the absence of these, it will be necessary to understand what is literally implied by the term Genius; what is the principal characteristic of those who have reached that envied pitch of human superiority. Dr. Johnson, in one of his periodical papers, says, "there is no genius without *invention*;" and Pope, in his Preface to the Iliad, observes, "It is *invention* that, in different degrees, distinguishes all great Geniuses." Whilst Shakespeare, more explicit than either, in his description of the powers of the Poet's mind, declares, that

"It bodies forth  
The forms of things unknown——  
Turns them to shape, and gives to airy nothing  
A local habitation, and a name."

By "invention," in the passages just cited, and "the forms of things unknown" of the Poet, nothing more can be understood than novelty of combination. Either that metaphysical novelty which consists in the formation of new complex ideas, exemplified in the Calliban and Weird

Sisters of Shakespeare; which latter, in his own expressive language, "look not like th' inhabitants of the earth, and yet are on't;" or that novelty of composition which continually surprises us with unexpected beauties; with objects familiar indeed to us, but arranged as never before seen; and introduced under new and pleasing associations. These form the greater part of our best productions, as well in the peculiar labours of the mind, as in those of art. There is no other sense in which the term "invention" can be understood. But as by "invention" something more is frequently thought to be implied; and as in the authorities before quoted, respecting Genius, there seemed to be entertained a notion of some innate power of the mind, some peculiar gift of nature, by which invention was favoured, it may be necessary to clear up this difficulty, before we proceed to the further consideration of our subject.

We do not say of a man who can make a clock or a watch, that he has therefore a Genius; but we speak of the compensation pendulum of Harrison as an evidence of Genius; because, in the formation of it, there was displayed "*invention*." But this invention did not depend on an innate power of mind in Harrison; it was not an *a priori* anticipation, but a result which owed every thing to accident and circumstance. Harrison, for *many years before* the discovery of his pendulum, knew every principle upon which it acts, as well as he



did afterwards; or, if he did not, there were thousands of others that did. He was not the first that detected the cause of error in clocks, nor was he the first that ascertained the different expansibilities of different metals, exposed to changes of temperature. These were well known; but these truths had always kept *at a distance from each other*, both in the mind of Harrison, and of all mankind; and his "invention" consisted *in seeing them together*. *The novelty of combination constituted Genius*. But Genius, as a power of the mind, neither prepared the preliminary truths necessary to this discovery, for they, palpably, were derived by sense; nor gave them that juxtaposition which led to the discovery, for that, most probably, arose from accident. On this subject I shall have occasion to speak more fully in the course of this Essay. But from what has just been advanced, we may conclude that Genius is that power of the mind, by which novelty of combination is produced; whether it be found in the imagery of the Poet, the useful discoveries of the artist, or the more profound conclusions of the Philosopher. Or, negatively, that it does not consist in acquiring that knowledge which others have taught, however subtle or refined that knowledge may be. Its attribute is *originality*.

If we sometimes use the term in a lower sense to express a capacity of learning, it is by way of intellectual courtesy, that we thus give credit to him

who readily attains knowledge, to be able also to cast it into new shapes, and untried arrangements.

As I have already complained of the want of argument and evidence to support the prevailing notion of Genius, it will be but just to advert to those vague proofs which we commonly hear advanced on this subject, before I proceed, regularly, to offer any objections to it.

We are, in the first place, called to observe the fact (which is fully admitted in the commencement of this Essay) that some men have risen to greater heights of excellence than others. Secondly, that some individuals in early youth, have exhibited marks of superiority of mind, as Pope, Cowley, Newton, &c. Thirdly, that children placed under the same circumstances, assisted by the same means, and encouraged by the same hopes, have displayed striking inequalities of progress in learning. Fourthly, That some men, in the language of Addison, already quoted, "without any assistance of art or learning, have produced works that were the delight of their own times, and the wonder of posterity;" or, in the words of Rousseau, "Common men only require education, others (that is men of Genius, the endowed favourites of nature,) will acquire knowledge, let us do what we will:" which is otherwise thus poetically expressed by Young, "Genius needs not go to school." And, lastly, some may rest their belief on the supposed indications of phrenology.



I have now before me two methods of discussing this subject. The one negative, which consists in exploding the errors of the preceding proofs; the other direct, which will lead me to exhibit the sources of Genius, to explain why some men excel others, and to show by what steps they rise to the greatest eminence; or, to confine myself more particularly to the distinctive quality of Genius alluded to, and acknowledged in this Essay, by what circumstances invention is favoured. If this were a regular dissertation I might adopt both, but the limits of an Essay forbid the attempt. I shall therefore glance only at the first, and throw the bulk of my observations and arguments into the last.

That some men have risen to greater heights of excellence than others, is not a *proof* of Genius, but a *problem to be solved*; it is the very question we are now agitating. And the fact of early indications of superiority of mind, such as were displayed in a Pope, a Cowley, a Newton, a Milton, &c. is explicable upon other, and sounder principles than the hypothesis of Genius. The first works of all these extraordinary characters, were the pure offerings, the *primitiæ* which the mind made to sense. It was in pastoral description, the scenery of nature, or every day objects, that the first breathings of poesy were heard; not in the argumentative Essay on Man, or the didactic Essay on Criticism. Lively images created lively emotions, and the language which declared them



easily ran into numerous composition. Even Newton, who was distinguished for mechanical ingenuity, did not, in his boyish essays, endeavour to give the parabolic figure to the speculum, or attempt to explain the different refrangibility of the rays of light. No! he laboured to imitate clocks and mills, objects ever before him, objects of sense. When we remember that Aristotle calls man an *imitating animal*, and *poetry* itself an *imitative art*; and recollect how Burke has illustrated this opinion, with the light and colouring of his brilliant imagination, we shall be constrained to see, that Pope and Newton did no more on these occasions than obey the impulse of nature. Why that impulse led them to imitation more than other children, will be explained in the sequel of this Essay.

The equality of circumstances, means, and encouragements, assumed by the advocates of Genius, are only plausible sophisms. They are not founded on truth; and will not be employed by any one who has thought correctly upon the infinite variety of accidents, which every hour may arise to disturb and destroy this hypothetical equality. It is not sufficient that they both live under the same roof, or both receive instruction from the same Teacher; a little more or less of corporeal vigor; even the light in which an object is seen, or the direction in which a sound is heard, may mar the equality at once; not to mention the dissimilarity of ideas existing in

the mind of each, when any new truth is offered to it, upon which depends, as we shall see hereafter, many of the consequences of even Genius itself. Besides these objections, who can believe it possible to commence at birth, and to continue from that moment, during the whole education of the mind, a strict equality of active and passive discipline, without a single interruption, without a single deviation; and yet, if these be not preserved, the parallelism is destroyed for ever, and the specious conclusion drawn from it, falls to the ground. But, in addition to the rest, I would ask, who will undertake to pronounce upon the equality of physical organization? Independent of which all reasoning is vain, and every inference deceptive.

The opinion advanced by Addison, and of those who agree with him, is not only palpably absurd, but contrary to every thing we know of men of Genius. If they have not studied in the Portico, *inter sylvas Academi*; nor listened to the oracles of a University Chair, yet their education, their self discipline, has ever been more laboriously prosecuted than that of the attendants upon those resorts of learning. Nor would it be so near the truth to say, that the University taught Newton as that Newton taught the University.

With respect to phrenological proof, I must, in consequence of the circumscribed limits of my Essay, forbear to say much. My opinion is, that if there be some truth in it, there is much more of



error ; that a comparatively confined, hasty, and of course, imperfect induction, has been drawn to support extensive, and even fanciful generalities. Whilst mankind, ever pleased with novelty, and always glad to be relieved of the labour of thought, or to be conducted easily to general conclusions, have readily embraced them, mistaking the pleasing phantom for a reality.

All these conjectures, however, though they furnished plausible solutions of the problem of Genius, were inadequate and unsatisfactory. There is no difficulty in nature which cannot be solved by an hypothesis. But as this *ingenii facilis labor* is the main pillar which supports the whole imaginary fabric, let us extend our researches to a few facts and testimonies which will shake it from its base : for when this prop is removed, the fanciful structure will disappear, and leave neither ruins, nor "a wreck behind" for its votaries to admire.

Had men of Genius attained to eminence without exertion ; or had their exertions been less than that of other men, then, indeed, these conjectures would have possessed some weight ; but the reverse of this is the fact. Men of Genius are always men of industry ; and if they gather more fruit than their cotemporaries, the rest of mankind, they have also prepared and cultivated the soil, watched and watered the plant of knowledge, with more assiduity than the rest of mankind. How far the soil may differ, and what influence this may have upon the

quantity and quality of the fruit, we shall see hereafter; but the necessity of diligent cultivation a few authorities will sufficiently establish: and no exception is made in favor of Genius.

What says Horace to the candidate for literary fame? Does he encourage confidence in Genius? Does he expect spontaneous excellence? No such thing. He instructs him to keep his work under his eye "*nonum in annum*," until the ninth year, that by careful and iterated revision, by the "*limæ labor ac mora*," by time and the file, he may polish what was at first rude, and perfect what was incomplete. Neither does he, in the unguarded language of Addison, advise the student to trust "to the mere strength of natural parts," under a belief that Genius, "without any assistance of art or learning," can conduct its possessor to distinction. No! Referring to the approved works and labours of others, he enjoins him, "*nocturna versate manu, versate diurna*," to read them by day and meditate by night. How reasonable this advice! How certain the success of him who follows it?

And what says my Lord Bacon? Why, that "*reading* makes a full man, and that if he read little, he had need have much cunning, (mark! not Genius,) to seem to know that he doth not." And we are all aware that the inductive philosophy of this great man, is founded upon diligent observation, a laborious exercise of the senses.

Swift read eight hours every day, and probably

wrote four more. Petrarch pined, and fell into a fever on the third day after he was deprived of the use of his library. And what says the immortal Newton respecting Genius, of whom the Marquis de l'Hospital asked, "Does Mr. Newton eat, or drink, or sleep like other men? I represent him to myself," said he, "as a celestial genius, entirely disengaged from matter." To all which, the words of Newton himself, used on another occasion, do not unaptly reply. "That if he had done any thing worthy of notice, and of service to the world, it was owing more to *industry and patience of thought*, than to any *extraordinary sagacity*. *I keep the subject,*" says the modest and amiable philosopher, "*constantly before me, and wait till the first dawnings open slowly, by little and little, into a full and clear light.*" How true a portraiture of Genius! How faithful a description of its labours!

And who is ignorant of the sea-side persevering industry, and the uphill, patient exertions of Demosthenes? Who, but with admiration, beholds him transcribing for the third time, the narrative of Thucydides? What a model for imitation! How it puts to flight the privileged claims of Genius!

"*Nil sine magno vita labore dedit mortalibus,*" says the classical Poet, which may be thus paraphrased: Nature grants nothing to the indolent, but offers her rewards liberally to the industrious.



Of Apelles we learn, so regular was his application, that "*nulla dies sine linea*," no day was suffered to pass by, without adding a stroke to his picture. Let this be done by all, and the same success will attend their labours.

David, also, speaks the language of philosophy, as well as of devotion, when he says, "Great are the works of the Lord, sought out of all them who have pleasure therein." The careless and the idle see them not; they are unfolded to the vision of the diligent only.

And why, also, did the Roman youths drink the infusion of cummin seed; which "*in vino epotum pallorem infert*," and which Horace calls "*exsangue cuminum*," but that they might resemble in *paleeness* the countenance of those who had watched the midnight lamp, and wasted health in the pursuit of knowledge; of those who had acquired eminence by toils and perseverance?—Men of Genius.

And, lastly, to draw your attention to a Genius of our own times, what patient perseverance did Herschel display in the prosecution of his optical labours? Application seemed to become more intense as disasters threatened to frustrate success: and in the end he accomplished his design.

To what conclusion do all these varied instances of the labours of Genius lead us? To none other than reason herself would prescribe for the education of all men; diligence, unwearied diligence; to trust to the "*culture*, not the soil." Though I

shall endeavour to shew in the sequel of this Essay, that if there exist a difference of *soil* amongst mankind, that that difference is *NOT mental* but *physical*, and that experience offers us every encouragement for its improvement: that it asks for cultivation, and leaves no apology to any one for not becoming a Genius.

But mankind, who complain of the want of Genius, expect to perform without industry, what others, whom they call men of Genius, have executed after long and laborious application; after years of study and infinitely varied experiment: and would thus, in reality, become more clearly possessed of a gift from heaven, than those whom they now extol. Hear the description given by Persius\* of one of these murmurers against the bounty of nature. I will quote it in the translation of Dryden:

“ With much ado his book before him laid,  
And parchment with the smoother side display'd;  
He takes the papers; lays 'em down agen,  
And with unwilling fingers tries the pen.  
Some peevish quarrel straight he strives to pick;  
His quill writes double, or his ink's too thick;  
Infuse more water—now 'tis grown so thin  
It sinks, nor can the characters be seen.

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\* The classical reader may not be displeased at seeing the coincidence of expressions, and more particularly of sentiment, between the third satire of the second book of Horace, and the third satire of Persius, from which last the above extract

Oh! wretch! and still more wretched every day,  
Are mortals born to sleep their lives away?

---

has been taken. They appear to be too striking to be accidental; and as I have never seen any allusion to them before, I have introduced them in this note.

## HORACE.

*Vini somnique benignus.*  
Si raro scribis, ut toto non quater  
anno  
*Membrana* poscas.

*Culpantur frustra calami.*  
*Contemnere miser.* Vitanda est im-  
proba Siren  
Desidia  
Nam, mala re gesta, cum vellem  
mittere—  
Me—in *flumen*.

Sed unde  
*Tam bene me nosti?*

Clamet—*uxor*;  
*Hic fossa est ingens! hic rupes*  
*maxima! serva!*

## PERSIUS.

*Iam clarum mane fenestras*  
*Intrat*, et angustas extendit lumine  
rimas,  
Stertimus indomitum quod despu-  
mare *Falernum*.

*Iam liber, et bicolor—membrana—*  
Inque manus chartæ,—venit—  
Tunc *queritur*, crassus calamo quod  
pendeat humor.

O miser, inque dies ultra miser.  
An *tali* studeam calamo? cui verba?  
quid *istās*  
*Succinis ambages!* tibi luditur:  
effluis amens  
*Contemnere.*

Nescit quid perdat: et alto  
*Demersus* summa rursus non bullit  
in unda.

Ego te *intus*, et in cute novi.  
*Imus*  
*Imus præcipites*, quam si tibi dicat,  
et intus,  
Palleat infelix, quod proxima nesciat  
*uxor*.

The introduction of the *patient* and his "*Medicus*," and the use of the word "*Helleborus*," together with a similarity of reflection through much of the two Satires, render it highly probable that Persius borrowed something from his predecessor Horace. The motto to the Satire of the former, might have been the line of the latter—

"Vitanda est improba Siren  
Desidia."



No more accuse thy pen ; but charge the crime  
 On native *sloth, and negligence of time* ;  
 Think'st thou thy master, or thy friend to cheat ?  
 Fool ! 'tis thyself, and that's a worse deceit.

But to conclude this part of my subject, I would thus address myself to any one who ascribed his want of success, in intellectual pursuits, to a want of Genius. Have you read much, eight hours a day, at least, like Swift, and thought more ? Has your diligence been greater as the difficulties you have met with have increased, like Herschel ? Have you been content to advance in knowledge as men of Genius have advanced, "by little and little, always keeping the subject before you," like Newton ? Have you pined, and lost a relish for all other objects, when you lost a communion with your books, like Petrarch ? Has not a single day passed by without a line to your labours, like Apelles ? Have you kept your composition nine years under your eye, as advised by Horace ; and all that time, by day and by night, examined and meditated upon the best writings of those who have lived before you ? Have you laboured to conquer physical defects, and struggled, as it were, against nature, like Demosthenes ?

If after these questions honestly answered in the affirmative, you complain you cannot learn, why then I will admit, without further proof, that you have no Genius. And if you wish to be thought to have one, would advise you, without delay, to

follow the prescription of Persius, and steep cummin seeds liberally in your wine. It would be useless to send such an one to Anticyra.

Conclusive as the preceeding reasoning appears to me, in answer to the specious arguments upon which the opinion of Genius is founded; still, agreeably to the plan proposed, I shall proceed to consider the manner in which knowledge is acquired; what distinguishes learning; and, lastly, what are the circumstances which concur to constitute Genius. And if I can shew, that all the variety of talent which the world ever produced, every instance of intellectual excellence which mankind ever admired, can be satisfactorily explained upon physical principles, we may, and we ought to dismiss the unsupported hypothesis of Genius. Genius, it is true, cuts the gordian knot at once, but then it is an instrument invisible, and incomprehensible. The evidence of its existence I have never yet seen; the evidence upon which the adequacy of a physical organization depends, I shall now endeavour to produce.

The mind of man at his birth resembles, as Aristotle observes, a dark chamber, the former of which through the senses, as the latter through an aperture, lets in a variety of images of objects: and, were it possible to cut off all communication between mind and matter, as the aperture may be completely closed, a perpetual darkness would exist in both. This is a most important consideration,

inasmuch as it lowers at once the vaunted claims of Genius to a dependence upon sense.

Genius, if such a power exist, would dwell in unexcited solitude, wholly unacquainted with the things of this world, if the eye, and the ear, and the other senses, did not introduce the cheering ray of knowledge. It would be a genius without a name. The *beau idéal* of intelligence.

Monsr. Trembley, speaking "des idées innées," a subject closely allied to Genius, though seldom perhaps considered in such affinity, truly says, "l'expérience dément ce système," and then adds, what none will dare to deny, "la privation d'un sens emporte avec elle la privation des idées attachées à ce sens;" the fair conclusion from which is, that if there were *no* senses, there would be no ideas, and consequently no knowledge; and, *a fortiori*, no Genius.

As I may be misinterpreted here, for Locke has not escaped censure, I will take the liberty of declaring, and briefly explaining my fixed opposition to the fatal doctrine of materialism, which, whilst it has a close, and almost necessary connexion with the notions entertained concerning Genius, is, as might be inferred, diametrically opposed to the reasoning and conclusion of this Essay. If Genius, which is the noblest evidence of the existence of something sublimely wonderful within us, may be vigorous or weak, have growth, maturity, and decay; it seems then to make the soul partake so



much of the properties of matter, that, without much violence to the imagination, it may be conceived, like matter, to be resolved into its elements, and for ever cease to exist. My own opinion is, that the soul is wholly independent of the body; that it is capable of existing when disunited from it; and that what we call Genius, is nothing more than the superior uses which the soul makes of it in its commerce with material things.—And this is countenanced by the declaration of the Apostle, who tells us, “whether there be knowledge it shall pass away:” and to what end would it be retained in a state of being, where objects altogether new, and a manner of existence altogether different, are designed for it? In that state those uses will cease, and those objects be no more.

But without having recourse to very profound reasoning upon this subject, if a single glance into the mind is not sufficient to convince us, that we are not made up “of matter and motion,” we may rest with confidence upon that rock of truth, divine revelation. Doubts and fears, conjectures and surmises, there end in certainty, that man possesses an immortal spirit.

Still that spirit, whilst conversant with material nature, through the medium of the body, must depend upon that medium for all the knowledge it can acquire. To explain how that knowledge is acquired is our present concern. And it is my design to shew that it wholly depends upon the senses.

Locke has contended for two inlets of knowledge, sensation and reflection. With respect to the former, little diversity of opinion exists; and it would not be necessary for me to say a single word upon the subject, but that the completion of the doctrine of this Essay depends upon it.

A knowledge of the figure, color, and aroma of a flower; the sound of music, or the flavor of fruit, can be derived in no other way than by the eye, the ear, the touch, &c. No language could describe, nor any Genius comprehend, by any other method, what is the sensation produced by the odour of a rose, or the sapor of a pine. Here sense, therefore, reigns absolute. Nothing can supply the want of sense. And if Blacklock wrote correctly, and even pictorially, concerning the "forms of things unknown" to him, we can easily find a solution of that difficulty, without ascribing any thing to Genius. If he could not see the beautiful color of the rose, he could smell its fragrance, and ascertain its structure by other senses; and be easily taught to apply any epithet whatever to it: as Pope described the "little nautilus" and alluded to "the mole's dim curtain and the Lynx's beam," which perhaps he had no more seen than Blacklock the rose.

Let us now proceed to consider that knowledge which is derived in a less direct way; I mean through the medium of oral and literary communications. This leads us to the source, whence we obtain an acquaintance with most of the truths of Philosophy,



the facts of History, and the state and circumstances of that part of the world which is placed beyond our own observation. Here we shall also find sense to sit paramount; and that in a twofold manner. First, because all the truths, facts, and observations of the Philosopher, the Historian, or the Traveller, originated in the exercise of the senses; and, secondly, because we cannot understand any one of these facts, truths, or observations, unless we have previously stored our own minds with at least the elements of them, by a use of our own senses.

Let us illustrate this by an example or two. Suppose a Philosopher to undertake to describe to us the structure of a pump, and to explain to us the principle of its action. Were he to tell us, that it consists of a long hollow cylinder, one end of which is immersed in water, and near the other end is placed a valve opening upwards; that above this valve, is a moveable air-tight bucket, having also a valve in it opening upwards; and then (supposing the cylinder to be filled with water) if the bucket be depressed, or be brought nearer to the lower valve, the water between them will open the valve in the bucket, so that when the bucket is raised, it causes the water to rise with it, whilst the atmospheric air incumbent upon the well, forces the water up the cylinder, and through the lower valve; and then by again depressing and raising the bucket, fresh water is brought up from the well.

Of what use would this description be to a person who knew not what a cylinder was, who had never seen a valve or a bucket? But you will say, perhaps, that a cylinder may be called a pipe, and the action of a valve may be explained by a door; very true, but still it is necessary that he should have seen the pipe and the door, or your illustration will yet fail. And how will the pressure of the atmosphere be understood without some evidence appealing to the *senses*. The air pump, or a visit with Pascal to the Puy de Dôme, or an æronautic excursion, accompanied with suitable apparatus, will be necessary to *prove* it; though it may be *explained* by other mechanical analogies; but even then the comprehension of such explanation, will depend upon a knowledge of those mechanical principles.

Will any one after this doubt the importance of storing the mind with sensible objects; since it is by such means only that things unseen can become known by description? It was probably the want of such resemblances that prevented St. Paul from relating his vision in "the third heaven;" and unquestionably it is the foundation of all knowledge; and should be made the basis of all Education.

As this is a most important point, and I never remember to have seen it adverted to, it will be profitable to consider it a little further. And as a pump is so familiar an object, that every one fancies it impossible not to be understood, it will be



well to refer to others not quite so common. Suppose some Historian to tell us that he has just beheld the Egyptian Sphinx, whose figure he takes it for granted, that we all know as well as he does himself: whereas the name creates no definite idea whatever in the mind. If we have never seen it, it is necessary that we should have either a graphical representation of it, or such a description of its parts, as may render the term intelligible. If he tells us that it is a gigantic figure having the head of a woman, the wings of a bird, the claws of a lion, and the body of a dog, I instantly behold, in my mind's eye, the incongruous monster. I have seen the head of a woman, the wings of a bird, the claws of a lion, and the body of a dog, and therefore, can, whatever violence may be done to consistency, very easily imagine them united together. But all this is evidently grounded upon sense, for the elements of this complex idea, are all acquired through the medium of the senses, although the object itself is a creature of the imagination. Genius is wholly excluded.

What idea would a close Citizen derive from that beautiful line of Shakespeare, descriptive of the approach of night, "The crow wings his way to the wood?" He, perhaps, never saw either a crow or a wood, and, very probably, never associated either with that interesting period of day, which renders this line so delightfully pictorial. But if the crow, and the wood, and the manner of flight,



be already familiar to him, then the language of the Poet may be *understood*; though many other, very many ideas must be united to these, to produce that richness and tenderness of feeling, which the whole is calculated to excite; and which, it is highly probable, that no description whatever could create in his breast. Again, we cannot doubt but that the *Georgics* and *Bucolics* of Virgil will be better understood, and more highly relished, by a cultivated mind that is acquainted with rural scenes and rural affairs, than one wholly a stranger to them. And for no other reason than because those scenes, and the objects of those affairs, have frequently interested his *senses*. And how differently does the description of a battle impress the mind of a common reader, and that of an old Soldier? How vague is the conception entertained by a Countryman of a first rate line of battle ship, or an East Indiaman! Whilst no language could have raised in the minds of the Greenlanders, visited by Captain Parry, an image at all commensurate with the appearance of the vessel itself. But, perhaps, the most striking instances of the inadequacy of language is to be found in Definition. We all remember the elaborate definition of network by Dr. Johnson; and we cannot but know, that that definition would fail to convey any idea of the thing itself, whatever Genius there might be in the mind of him to whom it was addressed. And what words can describe a Sloth, a Lobster, or a Bat?

These, and a thousand other objects, must be seen, or at least correct representations of them, before they can be understood. Sense here also reigns absolute.

I now come to the consideration of the last source of knowledge alluded to in this Essay, and which Locke has denominated reflection; and which he, as well as some other metaphysicians before him, considered as distinct from, and independent of sensation. As the reasoning of this Essay depends, in some measure, upon the removal of reflection, as a peculiar source of knowledge, I must intreat your patience whilst I advert to that metaphysical subject. I will endeavour to be as brief as is consistent with perspicuity.

Descartes, with whom this opinion respecting reflection originated, asks, in his second meditation, this question, "What am I?" to which he answers, "A thinking being; that is, a being doubting, knowing, affirming, denying, consenting, refusing, susceptible of pleasure and pain. Of all these things, I might have had complete experience without any previous acquaintance with the qualities and laws of matter; and, therefore, it is impossible that the study of matter can avail me aught in the study of myself."

Of these remarks Dugald Stewart observes, "they form the greatest step ever made in the science of the mind by a single individual." From this doctrine and opinion of these profound meta-



physicians, rash and dangerous as it may seem, I cannot help dissenting. It quite surprises me that Descartes should assert, and that Dugald Stewart should approve the notion, that "doubting, knowing, affirming, denying," &c. are powers or properties of mind, of which, in the language of the French Philosopher, he "might have had complete experience without any acquaintance with the qualities or laws of matter."

What, let me seriously ask, is "doubting," independently of some thing, or some question, arising out of the relations, accidents, or circumstances of matter, respecting which we entertain a doubt? What is "knowing," abstractedly of something, or some truth to be known? What "affirming," if there be not some proposition to be affirmed? And, similarly, I might ask of all these supposed properties or powers of the mind.

I feel myself quite incapable of thinking of these intellectual operations, called "doubting, knowing, affirming," &c. without fixing upon something material, or some abstraction, which is formed out of material objects, of which I doubt, which I know, or which I affirm. They resemble, indeed, very much the abstract ideas of the metaphysicians; such as whiteness, swiftness, roundness, &c.; and let any one attempt to think of whiteness without thinking of something that is white, or of swiftness without thinking of something that is in motion, and he will immediately perceive that it

cannot be done: so these acts or operations of the mind, are not properties of mind capable of existing independently of matter, but states or conditions of mind, arising out of a perception of its peculiar relation to matter, or a relation of objects to one another. And it seems to me most clear, that the mind would never have doubted, known, affirmed, &c. at all, if it had not first had a conversancy with external nature: or, as follows from Mons. Trembley's observation, if we were deprived of sense, we should be deprived of knowledge; and what, under such circumstances, would remain to doubt, to know, to affirm, &c.?

Of conception, memory, judgment, volition, &c. upon which knowledge of this kind is said to depend, it will not be necessary, after what has already been advanced, to add much more.

In conception, the mind is simply conscious of the former existence, and manner of existence of some material object; or, rather, it may be considered as a consciousness of some impression once made upon the senses. When there coexists a consciousness of the first impression, it is called memory. Upon what power, whether mental or physical, this faculty depends, I shall not here attempt to explain. They who have attempted it, have left it as they found it, quite inexplicable. The cells of Descartes are as rational, or as absurd, as any thing that has been offered upon the subject. How it may be improved, will form



a topic of enquiry in the subsequent part of this Essay.

In judgment, two objects are perceived together, and the relation subsisting between them. And what seems to distinguish man from animals, as respects this power of the mind, consists in a command over a larger range of ideas; which, at his will, appear in succession, and undergo this *mentally visible comparison*: whilst in animals it is much more restricted. Whether they can create a single *new association*, by bringing together any two independent ideas; or whether, when any object addresses itself to their senses, they have the power of tracing its resemblance, connection, dissimilarity, &c. with ideas previously received, I shall not undertake to determine; but the free and extensive exercise of this power, appears to confer on man his chief superiority.

How volition determines the mind to action, or communicates motion to matter, we know nothing. We cannot, in human language, speak of mind in its independent state of existence; it is ever associated with material objects. With Lactantius we must confess, "*nec quid sit mens, nec qualis, intelligi protest.*"\*

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\* I cannot forbear to quote a few words from this elegant writer; which, had they been remembered by Locke, when he wrote his admirable Essay on the Understanding, would have secured him from the unguarded expression, that "the power



One thing, however, is quite clear, that the simple abstractions above spoken of, and the more complex abstractions every day in our mouths, as justice, virtue, truth, &c. are all derivatives from objects of sense; and that even fancy or imagination, however wild or capricious, when "bodying forth the forms of things unknown, and turning them to shape," does nothing more than compound the simple ideas derived from sensation. A sphynx, a centaur, a phoenix, or a unicorn, is made up of members with which we are all of us familiar. And, to add authority to illustration, D'Alembert observes, "*Imaginari, nihil aliud est quam rei corporeæ figuram seu imaginem contemplari*;" whilst Stewart remarks, "That the abstractions of the Poet amount to nothing more than to a separation into parts of the realities presented to his senses."

From what has just been said, we are bound to infer, that the senses are the only inlets of knowledge. There being no knowledge which cannot be referred to sense.

I speak not here of Revelation, which can furnish no objection to the reasoning of this Essay. That Being who contrived five inlets of knowledge for

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of thinking might be added to matter."—"Cave ne unquam simile veri putaveris, quod Aristoxenus dixit; mentem omnino nullam esse; sed quasi harmoniam in fidibus *ex constructione corporis, et compagibus viscerum, vim sentiendi existere.*"

our oeconomy in this world, can, assuredly, add a sixth whenever it suits his all-gracious designs to do so. But whether it was by any means analogous to sensation, that "holy men of old," prophets and apostles, received communications from heaven, in "dreams and visions," as we cannot understand, neither shall I endeavour to explain. One thing most important for us to know, has been afforded us; viz.: that such communications were, what they professed to be, "the word of the Lord." This was abundantly *proved* by the evidence of miracles; an evidence, whilst it is the only one upon which the truth of revelation can stand, is the most conclusive and satisfactory that the mind can ask. And I may further add, that if the mode of deriving the truths was peculiar, the truths themselves were, every one of them, made up of sensible objects.

But if there be any one who thinks that he has an idea existing in his mind which had not its origin in sensation; or which has not a necessary connexion with sensible objects, I shall be glad to be told what that idea is, and by what method it was acquired. So necessarily are all our notions confined to objects of sense, that the whole of *Paradise Lost* (though a great portion of that sublime poem, concerns Spiritual Beings) consists of them; whilst in Scripture, we find the same attributes ascribed to God himself, which properly belong to man: had it been otherwise, they would have been,



like the vision of St. Paul, already alluded to, "impossible for man to conceive" them.

Let this fundamental truth be remembered; it is the key with which I hope to unlock the mind, and to shew that there is no such a tenant dwelling in it as Genius.

My first conclusion, drawn from the above truth, is obvious and incontestible—viz, that since all knowledge is derived, originally, through the medium of the senses, therefore, all knowledge must gradate with the perfection of the senses. This I will endeavour to illustrate by a few examples. And as we acquire a large portion of our acquaintance with external nature by the eye, I shall chiefly confine my observations to that organ: whilst it cannot be denied, that what is clearly proved of one sense, will be equally conclusive of all.

The naval officer, mentioned by Dr. Nichols, "who purchased a blue uniform coat and waistcoat with red breeches to match the blue," would certainly have never discovered the composition of light; nor ever have formed a Genius in Botany or Painting. As a Botanist he would have described a violet and a rose as of the same color; and had he exercised his pencil as an Artist, to represent an eruption of *Ætna* or *Vesuvius*, he would, probably, have colored the sky red, and have painted the fire blue: and had his object been the human figure, a naval officer for example, he would have "matched a blue uniform coat and waistcoat with

red breeches," to the no little surprise and discomfiture of the unlucky object who had sate for his likeness; and who, perhaps, had indulged complacent hopes of looking on the canvas unutterable things; but *multum abludit imago!*

Even to the celebrated Mr. Dalton, the red rays of the solar spectrum were scarcely visible; the whole appearing to consist of yellow and blue; and Mr. Huddart mentions the case of one Harris, that could only distinguish "black and white;" and he had two brothers almost equally defective; one of whom always mistook "orange for green." Perhaps the eyes of the whole family were required to see the entire spectrum.

To all these individuals, "knowledge" of a peculiar kind "from one entrance," as Milton pathetically exclaims, was "quite shut out." How could the different refrangibility of the different rays of light have ever been discovered, had all mankind possessed such organs of vision as these? Insuperable perplexities would have confounded their observation. To the naval officer, the red and blue rays, having nothing to distinguish them from each other, would have presented an inexplicable appearance;—viz. that of similar rays with different degrees of refrangibility; whilst to Mr. Dalton, the red rays would have been lost, and the orange or yellow have occupied a double portion in the spectrum. To Harris the prism would have afforded no information whatever. I need not draw



your attention to the achromatic telescope, or to the arts of the Dyer, with which mankind would have had but little acquaintance under circumstances of vision like these. So far therefore, knowledge of this kind, depends upon sense; nor could any power of Genius supply the defect out of its own imaginary resources.

But it is not Philosophy and the arts of life alone that would be narrowed by this imperfection of vision; not Botany and Painting only among the "*ingenuas artes*," that would be repressed; but the intellectual loom of the Poet would also be deprived of much of its most beautiful *materiél*; now furnished by the varied scenery of nature. Had Mr. Dalton been a votary of the muses, instead of a disciple of Philosophy, we should never have heard, in his pastoral songs, of "*flowery vales, and verdant fields*;" but on every side have beheld nothing but "*yellow meads of asphodel*." Birds, beasts, and trees, rivers, and plains, would have stood before us in burnished gold. Whilst a profile darkness, or a colorless brilliancy, would have alternated in the lifeless description of Harris. Nor would Shakespeare have ever entertained the sublime thought, of making "*the green, one red*." I need not multiply examples; numberless will press themselves upon the recollection of all who hear me, in illustration of this truth; and every one of them will serve to confirm the doctrine of this Essay: that sense alone supplies knowledge, and

that Genius without sense, is a name without a meaning.

The perversions, or deficiencies here spoken of, were extreme ; but who can doubt, and none can deny, but that they may exist in every *variety of degree* in others ; more or less perhaps in all ; and, of course, the perfection or imperfection of knowledge dependent upon that sense, as far as regards color, must correspondently vary.

What is here stated of an *aberration* of sense, may, with equal truth, and greater generality, be extended to *different powers* of it. We have within our daily observation, cases that range from perfect vision to perfect blindness ; and varieties of these again in the myoptic and presbytic eye, or long and short sightedness ; not to advert to the *muscæ volitantes*. The mistakes of Dr. Johnson, in his 'Tour to the Hebrides, can be referred to this cause only. And, to speak logically, whilst an acquaintance with the modes and accidents of bodies ; as their form, color, rest, motion, relation, similitude, &c. &c., which constitute all we know of them, depends upon a perfection of the organs of sense, so whenever those organs are defective, that acquaintance must be imperfect.

In further illustration of this argument, I will beg leave, very briefly, to advert to that branch of Logic which respects definition. Definition, as many of you well know, consists in bringing together the general nature and essential difference



of an object. Now the general nature, even what is called the proximate general nature, exists in those properties which are apparent to all mankind; and may be perceived without much labour. But the essential difference commonly resides in some minute, obscure, or at least not very obvious quality of it; and, therefore, can seldom be discovered but by accurate observation, and diligent research; after multiplied enquiries, and faithful comparisons. And how can he examine accurately, or compare faithfully, whose organs of vision are defective? Thus, for example, a horse and an ox agree in many points; they are both quadrupeds, are both covered with hair, have many members in common &c.; this constitutes their general nature. But they vary in the hoof; the one being whole, the other divided; this constitutes their essential difference. An imperfect eye might discern the first; but a correct eye, and patient investigation, such as were possessed by a Linnæus, will discover both. To a myoptic eye they might for ever have been confounded.

Thus I have endeavoured to show, that all knowledge is dependent upon the senses; and that the degree of perfection of knowledge, will vary with the degree of perfection of the organs of sense. It is true that the *quantity* of knowledge will vary, if I may use the language of the mathematicians, in a compound ratio, with the perfection of those organs, and the exercise of

them; but no perfection in the former can supersede the necessity of the latter; although greater diligence, with less perfect organs, may more than compensate such deficiency: this is the tortoise beating the hare. Where a perfect organization is united to incessant industry in collecting and combining ideas, there will result Genius. But it would still be wrong to conclude, that feeble organs cannot be made strong by discipline; and industry we are certain is within our control. An opposite opinion would contradict daily experience; and fatally repress that application, which we may pronounce, almost with certainty, would lead to success.

I might here dwell on that most encouraging consideration, the almost illimitable improvements of which the organs of sense are susceptible; a point of primary importance in the education of the mind.

What a stimulus to exertion do we discover in the Painter, who, from a cultivation of the organ of vision, can distinguish shades of colours where an unpractised eye can perceive none. In the Optician, who will instantly decide upon the graduation of an instrument, which another would have to examine with a microscope. In the Musician, who hears nothing but discords in music, where an untutored ear is sensible of nothing but harmony. Or, to mention more homely examples, how accurately will a Farmer



pronounce upon the weight of an ox, or the size of a field, or even the quantity of a crop! whilst a Sailor at sea, will measure his distance from the land, with a precision almost incredible. And I remember to have heard or read of a blind man who could tell the size of a room by the stamping of his foot. Here we find one, who can write the Lord's Prayer and the Creed within the compass of a sixpence; whilst there is another, who will dissect with ease, and explain with accuracy, the anatomy of a flea. Need I mention, that the parallel lines of micrometers, are sometimes drawn within the ten thousandth part of an inch of each other\*; and of the correctness of this parallelism, the eye is required to judge! whilst to a practised touch, the one sixty thousandth part of an inch, is declared to be sensible! Who, after these examples, will set bounds to the improvement of the senses?

But perhaps it will be contended, that Genius

\* Mr. Troughton, in a paper read before the Royal Society, observes, "I must here remark, that Smeaton has represented the greatest degree of accuracy that can be derived from vision, in judging of the coincidence of two lines, at  $\frac{1}{4000}$  part of an inch. From this it may fairly be inferred, that *he had not CULTIVATED the power of the sight*, as he *had done* that of the *touch*; the latter of which he rendered sensible to the  $\frac{1}{60,000}$  part of an inch. It is now quite common to divide the

puts in a higher claim than has hitherto been assigned it: that it exercises itself in creating the fine imaginings of the Poet, the sublime sentiments of the Orator, or in expatiating in the profounder regions of philosophy. To this claim let us now direct our attention. And as the Poet professes to have taken larger draughts of this inspiring spirit than other men, let us first examine the fruits of it in his labours. We shall still find it grounded upon sense; the genuine offspring of sense and industry.

Homer, the prince of Geniuses of this class, describes Neptune in the following lines; which Longinus extols, not only as peculiarly grand, but altogether unearthly; an opinion which he

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seaman's sextant to  $10''$ , and a *good eye* will estimate the half of it; which on an eight-inch radius is scarcely  $\frac{1}{10,000}$  of an inch. And such is the certainty with which these quantities are seen, that a *seaman* will sometimes *complain* that two pair of these lines will coincide at the same time; and this may happen, and yet no division of his instrument err, by more than  $\frac{1}{20,000}$  part of an inch. By an *eye practised* in such matters, a coincidence may undoubtedly be ascertained to  $\frac{1}{50,000}$  part of an inch."

The above observations of that ingenious artist, are strikingly confirmatory of the opinion expressed in this Essay, and highly encouraging to cultivate the organs of sense.

modestly admits that others had entertained before him.

“With grief and fury stung,  
 Prone down the rocky steeps he rush'd along;  
 Fierce as he pass'd, the lofty mountains nod,  
 The forest shakes: earth trembled as he trod,  
 And felt the footsteps of the immortal God.  
 From realm to realm three ample strides he took,  
 And, at the fourth, the distant *Ægæ* shook.”

That this is a sublime description no one can deny. It is a picture drawn by a master-hand, which fills the mind with ideas of power and majesty. But every particle of it originated in sense. What entitles it to the character of Genius we shall very soon perceive; but let us first advert to the elements of this exquisite piece of composition.

“Grief and fury,” unhappily, are objects too frequently seen in the world, to leave any question as to whence they were derived; and the “grief and fury” of Neptune have nothing peculiar in them. The next line might have been applied to a less dignified personage than the ruler of the sea; unless we are to fancy the “rocky steep” to be so rugged and precipitous, as to admit of no passage, except to the more than gigantic footsteps of the god. The nodding of the mountains, the shaking of the forests, and the trembling of the earth, are a series of sensible objects, easily understood by



every one. And if we must refer all these to the incumbent weight of Neptune, we only see the human figure extended into the mighty ruler of the ocean. Magnify man a thousand, or ten thousand times if necessary, and you make him into a Neptune at once. If *this* be Genius, who *may* not possess it? Swift, in his Voyages to Laputa and Brobdignag, manifests it in perfection; for he looked at nature through both ends of the telescope.

Let us take another example, from an admired poet of our own. Goldsmith, speaking of the Village Preacher, describes him by the following beautiful simile:

“As some tall cliff that lifts its awful form,  
 Swells from the vale, and midway leaves the storm;  
 Though round its breast the rolling clouds are spread,  
 Eternal sunshine settles on its head.”

Here we have an assemblage of sensible objects familiar to many, and easily understood by all mankind. It would be tediously unnecessary to descend to particulars; for it is too clear to need illustration, too obvious to require proof, that these images which delight the mind, and move the passions; which lead us as it were out of ourselves, are still all, all objects of sense. Their very excellency consists in it. But lest some should think that I have here degraded Genius, because I have attempted to remove her from an imaginary



throne, I will now proceed to vindicate her claim ; and to assign to her those honours to which she is entitled.

What constitutes the Genius of Homer? First, the vast amplitude of his knowledge. His observation of nature and of art must have been unwearied, and its accuracy extreme. He saw, and heard, and felt every thing that could communicate information by these media. And in his mind, as in a mirror, every object acknowledged the fidelity of its image. This was the foundation-stone of his Genius. When this was laid, every thing that he heard from others, found some kindred idea in his own mind, which either illustrated, or enlarged the information he received ; and no object, no scene, no circumstance could be mentioned to him, but he found the elements of it already in his possession ; whence novelties themselves became immediately familiar to him. Possessed of this rich intellectual store, his labour in producing the *Iliad*, would be comparatively easy. When he wanted to describe a storm, it was only necessary for him to unlock his cabinet, and the picture was more than half drawn. When he called a council of the gods or of men, (for his gods were little else than men of larger powers) he furnished them with sentiments appropriate to each. Whilst a Jupiter, as well as a Thersites, found archetypes ready formed in his own mind ; or, at least, those elements out of which they might easily be moulded.

He had ransacked nature for similes; so that no action, circumstance, or appearance could occur, but he had its symbol ready for its illustration. And, lastly, his Genius consisted in the association of ideas which no man before him had united together. And this is the source, the only source of that Invention, which Pope and Johnson declare to be the characteristic of "great Geniuses."

We are now arrived at a very important part of our discussion, and I will endeavour to place it in as clear a light as possible, because I hope, thereby, to banish Genius, in its present acceptation, from the minds of men, and to shew by what path they may every one of them, hope to reach it. But before I proceed to the consideration of this point, it may be necessary to define more accurately, what I understand by Genius. With Johnson and Pope, I think it always includes "invention;" and sometimes it seems to include something more; or at least, in the higher efforts of Genius. I should consider him a great Genius, who, out of the resources of his own mind, first forms a number of new particular combinations; and, afterwards, unites them so as to produce a whole, that is subservient to some one useful end; or to the establishment of some one important truth. Thus, he is a Genius, though of humble degree, who contrives a more beautiful window, or a more useful porch than was known before; but he who plans and executes a stately edifice, in which symetry and utility are



more perfectly united in all the parts, both exterior and interior, than mankind had ever beheld, is a Genius of a higher order. A man "who carves a head upon a cherry stone," or writes a sonnet, may have a kind of Genius; but Milton, who "hews a colossus out of a mountain," and frames an Epic Poem, had a Genius of a sublimer order. The difference does not consist in the *kind* of excellence, but in the degree of it. The one is an excellence in particulars only; the other in an aggregation of particulars, all judiciously arranged, and all conspiring to complete one grand design: and both owe every thing to invention: whilst invention owes every thing to knowledge and accident; knowledge owes every thing to observation, and observation depends upon sense.

Still, perhaps, it may be asked, whence the knowledge of one man leads to invention, or novelty of combination, more than that of another. To this I answer, fearless of a reply, the same diligence of mind that was employed in the acquisition of knowledge.

The man of Genius, is ever arranging, and rearranging the truths with which his mind has been stored by observation, in new forms; ever considering them in new relations. Like the Chemist, he is ever experimenting upon his knowledge; always watching results; and, therefore, is ever ready to seize hold of any new combination. Thus, it is not to be presumed that the simile of Goldsmith,



was an easy, off-hand production, which cost him no labour. No! They are very much deceived who fancy, that there is any intellectual Juno-Lucina to facilitate the birth of these conceptions of Genius. In the instance before us, the Poet wished to exhibit, pictorially, an object firm, elevated, serene, and partially obscured. These, after perhaps a thousand abortive resemblances, he found in the tall cliff, midway enveloped in clouds, with its top illumined by the uninterrupted radiance of the Sun. The Genius of the simile consisted in the novelty of combination: it was not the offspring of any innate, or peculiar talent of mind, but the reward, the honest reward of industry; of industry which no one can properly estimate but the author himself. To confirm this by a fact recorded of the same ingenious writer, we are told that the first line of his *Deserted Village*, cost him twelve months in its gestation. No very flattering proof of the toils of Genius, except in the sense in which they are received in this Essay. And had men of Genius given a faithful history of their silent labours, we should have seen, in every one of them, that perfection has been a slow and gradual work; produced, as Newton declared of his own, "by little and little;" and as Cowper has told us of himself, by "blotting out and revising" with unwearied application.

I stated, in a former part of this Essay, that "invention" owed every thing to accident and cir-

cumstance. Let us now proceed to consider the verity of that statement.

If Genius were a peculiar property of mind, which conferred upon its possessor superior powers, it ought to manifest those powers in a peculiar manner, and not according to the ordinary modes of common minds. "Invention" should be the result of *a priori* reasoning: or at least the proposition and demonstration should spring up together. The slow processes of tentative experiment should be despised; and the profound truths of philosophy, and the brilliant imagery of the Poet, appear as emanations only of its powers. Genius should march before observation: should be several days in advance of the senses; and call them in for no other purpose than to confirm its conclusions, and admire its labours. But is this the fact? Did not the declaration of Newton, already quoted, deny it? And is there one instance upon record to support it? Not one. Even those shrewd guesses, or if any one choose to call them so, those happy anticipations, which certain great men, at different periods, have published to the world, were either founded upon strong analogies, a mode of reasoning not confined to Genius; or were random conclusions, which unexpected coincidences, have rendered remarkable. Thus, the notion of Newton, that water and the diamond were combustile; that of Swift respecting the Brobdignagian Telescope, which discovered a multitude of stars too remote



to be seen by the best instruments ; that of Capel Loft of a planet between Mars and Jupiter. The first of which has been confirmed by recent chemical discovery ; the second realized in the telescope of Herschel ; and the last completely established, in the new celestial bodies, denominated Asteroids. But all these were, as has been just observed, mere guesses founded upon analogy ; and in no respect better than the singular guess of Seneca, in one of the choruses of his *Medea*, that another continent existed ; which the subsequent discovery of America by Columbus, has amply confirmed.

“ Venient annis

Sæcula seris, quibus Oceanus

Vincula rerum laxat, et ingens

Pateat Tellus, Tiphysque Novos

Detegat ORBES ; nec sit Terris

Ultima Thule.”

Though, from the last line, it may, perhaps, still be considered prophetical ; and to wait a fulfilment in the arctic explorations now prosecuting under Captain Parry. Having thus excluded Genius from this her high prerogative, let us turn our attention to the accidents, and circumstances, already alluded to, upon which it depends.

Thus, Archimedes, whilst entering the bath to refresh himself, (no idler it seems) had his mind so occupied with philosophical speculations, that he



no sooner saw the water overflow its sides as he entered it, than the solution of the problem respecting Hiero's crown immediately rushed upon him; or, in other words, the mode of determining the specific gravity of bodies. Genius had before failed to assist him, and accident here stepped in to remove the difficulty. Surely there was nothing marvellous in the conclusion he drew from that simple fact; nothing that required Genius. Who would not be ashamed to be told, that when a body is put into a vessel full of water, it will displace as much of that fluid as is equal to its own bulk? And yet this was all that Archimedes discovered; or at most the general conclusion deduced from it, was a simple corollary. It is true, I once thought corollaries the greatest efforts of Genius: and when I first read the Principia of Newton, had almost fallen a victim to the doctrine of Genius; for, after passing from a demonstration of a proposition, easy enough to be understood, I frequently met with three or four corollaries, without any demonstration whatever, which for some time perplexed me exceedingly; and for a long time led me to think, that there must have been some peculiar power in the mind of Newton to see conclusions so apparently remote. I afterwards discovered, and Newton also confessed, how these things happened to be; and Genius was banished as a cheat. The commentary of Emerson would have divulged the secret, and removed the mystery at once. But why,

you will ask, does not the same inference rush upon you? I answer, because your minds are not engaged in speculations upon this subject, as his was. It was the accidental concurrence of the fact, and the train of reflection existing in his mind, that led him to the inference.

In like manner, Newton was led to the theory of universal gravitation by the fall of an apple. Not because his Genius elicited from that simple circumstance such a conclusion. No such thing. He had, in his own language, "by patient industry, by keeping the subject always before him," (and mark! it was before him when the apple fell) prepared his mind to be conducted to that conclusion. Most men, and, perhaps, even Newton himself, under other conditions of mind, might have been exposed to a shower of apples as thick as hail, without deducing that, or indeed any inference from it. And why? Because they wanted Genius? No! But because the fall of the apple, would then have happened at a moment when it served not so strikingly to illustrate the reasoning of the mind. The two would not have been simultaneous.

So Galvani was pursuing a course of experiments upon animal magnetism, when his Lady observed, and reported to him, the unaccountable muscular contractions which had presented themselves to her, in some prepared frogs, when brought in contact with certain metals. The coincidence led to the discovery; Genius had no share in it. And if it



he contended that the very pursuit of Galvani is an indication of Genius, I would beg to observe, that but for this accident, he might have passed into his grave unhonoured and unknown.

I will not detain you any longer with examples of this kind ; or I might allude to the discovery of electricity by Thales, and of the telescope by Jansen, or rather, perhaps, of Jansen's children, who, therefore, in accordance with the received doctrine of Genius, ought to be numbered amongst its favorites. One fact is incontestible, that all these "inventions" of Genius, were nothing more than the concurrence of accident with the active state of a mind previously stored with knowledge ; with knowledge which had been derived from its own observation, and the communicated observations of others. Whilst, from the foregoing part of this paper, it is clear, beyond question, that the whole of that knowledge, both individual and communicated, owed its origin to sensible objects, or abstractions derived from them ; or in other terms, to a perfect organization of the senses.

Before we proceed any further in our inquiries, let us briefly review the progress we have made, and the conclusions we have drawn. It will serve to refresh us on our journey, and make the remainder of it, though short, more pleasant ; we shall have an opportunity of comparing fresh scenes with those which are past.

That information which any one gains by obser-



vation alone, is the lowest and simplest species of knowledge; although it is the pregnant germ of the highest human intelligence; and is essential to the production of the choicest fruits of Genius.

When the ideas derived by observation, are compared together, or, as I prefer considering it, are seen together, (for comparison is then involuntary,) and useful conclusions are drawn from such simultaneous vision; there results learning; although we are not accustomed to apply this epithet to any one who has not accumulated a considerable stock of these conclusions. When the conclusions have been adopted from others, without undergoing a strict analysis, and examination, by the test of our own observation, although they may be founded in truth; this constitutes learned ignorance.

When genuine learning is united to mental industry, accident or circumstance will, in all probability, lead to novelty of combination, called "invention;" and this is, justly, denominated Genius.

Thus, all men possess more or less of simple knowledge; so much so, that we can seldom surprise even the most illiterate, with any new sensible idea; men of learning are every where to be met with; and learned ignorance obtrudes itself upon us at every turn: whilst men of Genius, now and then only, arrest our attention, and excite our admiration. The first of these walk upon the

face of the earth, and look upon nature with a mere animal eye. The second and third, are admirers of the picturesque scenery which surrounds them, and enjoy its beauties; or are, in the latter case, the mere echoes of those who do so; but they add nothing to it. The last are the labourers in the fields of science, who have enriched the landscape with objects useful and pleasing; and which every day present some new appearance to fascinate, or benefit mankind.

Having established the main propositions undertaken in the beginning of this Essay, I shall now confine myself to a few further illustrations of their truth; and shall then attempt to show, by an example or two, what method ought to be pursued by those who are desirous to possess Genius; and shall conclude with a few practical observations, on the best mode of educating the mind.

On this occasion, I can do no more than anticipate the objections which may be urged respecting the divine gift of "wisdom" to Solomon, or the "gifts" to which St. Paul so frequently alludes. This, however, may be remarked, that those cases are either individual, or specific; the very *grant* to Solomon proves it to be extraordinary; whilst the "gifts," mentioned by St. Paul, are wholly "spiritual," and as clearly miraculous. The day of Pentecost was a day of sublime wonder, and cannot, without the grossest perversion, be drawn into an evidence in favour of Genius. The apostles

"spake with tongues as the Spirit gave them utterance." There was no analogy between their spontaneous command of divers languages, and the manner in which the eloquence of the most erudite linguist has been acquired. The attainments of Crichton were all natural.

And if Pope "lisp'd in numbers," and Cowley wrote verses earlier than other boys, these were no proofs of Genius ; for Dryden, and even Virgil, began late, and furnished equal evidences of it. They only show, what our knowledge of Pope might easily lead us to expect, that to an extreme physical sensibility, was added diligent and correct observation. Pope no more excelled other boys at the age of twelve, than he did other men at the age of forty ; and no reason can be given, why the fruits of this more lively physical organization, should display themselves at the one age than at the other.

The same remarks will, by contrast, apply to the well-known examples of the sons of Cicero and Chesterfield. I doubt not, if we could have examined the structure of their organization, we should have found it ill adapted to become "feelingly alive to each fine impulse ;" and in the "lack lustre eye," should have discerned enough to silence inquiry, why they disappointed the hopes, and frustrated the labour, of parental anxiety. The fault, however, to which their want of success may be ascribed, consisted, wholly, in the manner



of their education. They were treated in the same mode, and subjected to the same discipline, as if there had existed no physical defect whatever. There is, perhaps, no greater practical, and more mischievous error, prevalent in the world, than that all men may be taught according to one system of rules.

The phenomenon of the calculating boys, I shall not attempt to explain in this place. Their talent is, certainly, very distinct from what we understand by Genius. It seems, rather, to resemble intuition. Or, if theirs be Genius, then Homer and Newton possess no Genius; for all their works were the fruits of labour; whereas these boys possess their talent, not only without exertion, but also without knowing how they came by it, or even without being able to explain it. I have seen the root of an adfected cubic equation, said to have been given by one of these boys, in much less time than Newton himself could have performed a tenth part of the operation necessary to find it.

Besides the views already taken of this most interesting subject, there are many others equally important, and equally conclusive, as to the doctrine of this Essay. For example, the decay of Genius; to which allusion has already been incidentally made.

Newton, in his old age, could not understand his own Principia. This is easily to be explained, if Genius depend upon physical organization; but,

if it be a principle of the mind, it is either quite inexplicable, or it leads to the fatal, erroneous opinion of materialism. In the former case, as the instruments of the mind become feeble, its own apparent powers naturally become less; (while its absolute powers remain unchanged;) in the latter case, as the vigour of the body declines, the energy of the mind ought to increase; as the soldier gains additional strength, by putting off the inconvanience of dress.

What age almost always produces, a single paroxysm of fever will frequently occasion. Genes, the author of *Sensibility*, so completely lost his poetical Genius by a fit of sickness, as hardly to be convinced afterwards, that he was the author of his own works. No one will wonder at this, if Genius reside in a frail, and delicate structure of nerve, which a thousand casualties may injure, or destroy; but he must be lost in mystery, when he considers it as a property of the mind.

And how easily may we understand the reason, why a Chatterton and a Milton, felt higher powers of imagination, as they confessedly did, at the vernal equinox, if we consider them as dependent upon sense; which, at that season, throughout animated nature, is more active and vigorous; but, how obscure is the cause, if the hypothesis of Genius be admitted.

Similar to this, the man of Genius finds other, and more frequently recurring intervals, when

“the line too labours, and the words move slow ;” as if reason and imagination had both forsaken him ; and scarcely an hour shall elapse, before the mind feels the full tide of intellect return again : and no cause can be assigned for it, except that of Sterne, who “blamed the weather for the discomposure of his nerves.” I dare only mention the simultaneous appearance of Geniuses at certain periods of the world, and the moral excitements assigned by Montesquieu, as its efficient cause. All of which, like every instance to which we have adverted, is plain and easy of solution, if Genius reside in the unwearied labours of a perfect organization of sense ; for the senses may be roused into action by a variety of circumstances, moral, physical, and political ; but how any excitement can create a gift of nature, a mental endowment, is not to be understood. And if the “mute inglorious Milton” of the village, be supposed to remove the difficulty, by exhibiting the powers of an undeveloped Genius, which only waited some genial impulse to unfold itself ; I would ask the advocates of this doctrine, to *prove*, not affirm, that such Geniuses have ever existed ; since the examples themselves have, confessedly, furnished none : for they are called “*mute*.” The reasoning of this Essay supposes their existence, by referring every thing to sense, which may be as perfect at Mantua as at Rome ; and thus we give meaning to the expression of the Poet.



The last argument that I shall employ, and it is a very interesting one, may be drawn from the different capacities discoverable in different animals of the same species. For example, one dog, as the sportsman well knows, is more teachable than another; but no one ever thought, and much less ascribed, this to Genius. It can depend upon no other cause than a more perfect organization; unless the advocates of Genius will admit brute natures into a participation with themselves, of the nobler powers of the mind. It must, however, be confessed, that they seldom display invention, upon which this *vis divina* is said to depend: though canine, and vaccine Geniuses, are mentioned in Spurzheim's Treatise on Phrenology.

Having claimed so much for the senses; and endeavoured to support that claim by a reference to some of the most striking instances of Genius; let us now attempt an illustration of the doctrine of this Essay, by demonstrating the manner in which the truths, inventions, or novel combinations, which constitute Genius, may be derived.

Although many readers, into whose hands this Essay may fall, will, doubtless, possess an intimate acquaintance with the physical properties of Light and Heat, as well as their chemical action upon other bodies, yet, I may presume, that there will be some to whom those properties, and this action, are not well understood. To them I beg leave more particularly to address myself; and if their

modest distrust of themselves, has led them to think that nature, "a mother kind alike to all," has not dispensed to them the gift of Genius, I hope to shew, that the thought is unworthy of themselves, and unjust to heaven. And that the force of my example may be the stronger, let us suppose, that those persons have now, for the first time, beheld a lighted candle. So curious an object would, naturally, draw them to examine it. They would not be contented with looking at it, but would, probably, wish to feel it too. They would, however, very soon learn, that it forbids so unhal- lowed a freedom, by inflicting pain upon the offend- ing finger that approached it. They would then, perhaps, introduce some other body, not endowed with sensibility into it, as a piece of stick, or paper; and would, with surprise, behold an apparent anni- hilation of both, together with an increase of flame and heat, as if enraged at the offence. Lost in wonder at the devouring element, they would try its action upon more solid bodies; as a piece of metal, iron for instance; which they would dis- cover to become heated without becoming lumin- ous; and, also, without being destroyed; but not without losing its metallic lustre. Here a multitude of conclusions would press upon the mind. First, that the heat and light must be different things; as the one existed where the other was not present. Secondly, that the metal became heated at the part held in the hand, much sooner than the piece of

stick; and, therefore, that the metal was a better conductor of heat. Thirdly, the tarnish observed upon the iron, would, if it were held long enough in the flame, become scaly; and might then be easily detached, and readily reduced to powder. This might be called burnt iron, or calx of iron, or, according to the modern nomenclature, oxide of iron. If a piece of glass were interposed between the flame and the finger, it would be seen, that the light passed through it instantaneously, but that the heat was for some time, detained behind it. This would confirm the former conclusion, that light and heat were different things. If there happened to be a plain mirror in the room, it would soon be perceived, that in order to see the candle in it, we must stand as much on one side of the perpendicular to the mirror, as the flame is on the other; or, that the angles of incidence and reflection of light, are equal. And if we had a bason of water before us, we should see the bottom of the bason considerably raised; and, hence, we should soon discover the refraction of light, and the refractive power of water. And if there happened to be a lustre in the room, all the colours of the rainbow would be seen in it; which might easily lead us to the composition of light, and the different refrangibility of its rays. If the candle were put into a close vessel, it would soon be found to go out; which would naturally lead to the conclusion, that something was destroyed, or



consumed, essential to inflammation. This would lead us, in another step or two, to the supporters of combustion, and the composition of the atmosphere. And as some curiosity would be excited, to ascertain what became of the whole of the tallow consumed, the candle would be burnt in a close vessel, and the contents of it, afterwards, be examined; which, under a little variety of management, would lead to the constituents of tallow, and the products of combustion.

All these simple facts, and many others, equally simple, might address themselves to any individual whatever, and might give rise to all the reflections, and lead to all the conclusions here noted, without demanding any assistance from Genius. And if the physical organization of the senses were perfect, and the individual active; if a spirit of enquiry existed in him to trace back these palpable facts to their causes; or to pursue them through their several relations to each other, and to other truths, derived in the same manner from the observation of other objects; what a vast fund of philosophical knowledge would be acquired? Knowledge, which has been ascribed to Genius as its peculiar offspring. The theory of reflection, refraction, and refrangibility of light; the doctrine of colors; the nature of combustion, with its supporters and products; the oxidation of metals; the distinction between heat and light; the chemical properties of air; and the different conducting powers of heat

in different bodies, &c. &c. These theories have immortalized a Newton, a Leslie, a Thompson, a Lavoisier, a Kepler, a Priestley, &c., and raised them to the rank of Geniuses among mankind; and yet I should wish to know, which single fact, or which single consequence, common minds, and common industry, could not discover.

I do not mean that any mind would, instantly, deduce all these conclusions from these obvious appearances. Certainly not. But any mind might deduce them, without having any recourse to the hypothesis of Genius; and most minds would deduce them, if, at the time of observation, they were engaged in congenial speculations; as Newton was when he discovered gravitation, and Archimedes when he discovered the question of specific gravity.

But that we may still more clearly perceive, the full benefit of this our own personal observation of, and consequent reasoning upon, this simple object, let us consider with what facility the stock of knowledge we have acquired, will enable us to read and understand the labours of others. For example, we know now that the angle of incidence of a ray of light impinging upon a plane surface, is equal to the angle of reflection, and that those angles have a fixed ratio to each other in the refraction of light passing through water; and, by analogy, through glass; and, consequently, we can proceed to consider the principles of the reflecting



and refracting telescope ; although we have not those objects before us, or have never seen them. It is true, that a slight knowledge of Geometry will be necessary ; but then the truths of that science ask no Genius to comprehend them ; they are all, in a peculiar sense, demonstrated.

In like manner, we are prepared for the higher views of chemical philosophy, if we carry with us the light we have obtained from these observations, and the same ardent enquiry after knowledge ; and in all cases, wherever our researches may lead us, we shall find, that truth rests upon sense : even in the abstract science to which I have just referred—Geometry. For when we say, that the three angles of a triangle are equal to two right angles, although this is a universal truth, and is not *confined* to *this*, or *that* triangle, yet it *belongs to all* ; and to perceive it we must see it in one. I would rather call it a general truth, or a truth which is predicable of a genus, than an abstract truth. There would be less liability of error in such a form of expression ; and much of the warm contentions between the nominalists and realists, would have been spared by it.

If not content with simple observation ; nor satisfied with the communications of others, we exercise ourselves in forming new combinations, or attempt new associations of our ideas, there is every encouragement afforded us to hope, that some arrangement will be discovered, to which



accident may lead us when we least expect it, as it before led a Newton, and an Archimedes; and our labours obtain the merited character of Genius. Let us not despair; we know, by simple arithmetic, that ten objects only may be arranged in more than three millions of different ways; and in nature there are millions of objects, and tens of millions of properties belonging to them, so that we shall never have to weep with Alexander, for worlds of science to overcome. At present we are upon the threshold of the vast temple of knowledge; ages may pass away whilst mankind are advancing through the porch; and, perhaps, eternity will open upon us before we reach the adytum itself. During our progress, however, we may exclaim of Philosophy in general, as the Poet with perfect truth, exclaimed

“ How charming is divine philosophy !  
Not harsh and crabbed, as dull fools suppose ;  
But musical, as is Apollo's lute,  
And a perpetual feast of nectar'd sweets,  
Where no crude surfeit reigns.”

Having shown that the direct road to philosophy, is through the diligent exercise of sense, perfect in its organization, it will not be necessary, though it would not be difficult, if the limits of this Essay would permit it, to erect as certain finger posts to the Epopæa; the paths run parallelly; and

he who has made a progress in the one, might, if he had begun early, as successfully have advanced in the other: and in both he must have trusted to sense.

That I may not be supposed to have advanced this opinion, without some authority to support it, I will quote, from the life of Milton, a faithful direction to the highway, by which that exalted Genius reached the summit of excellence. They who feel disposed to tread the same path, will find it conduct them to the same eminence.

“Milton,” says his Biographer, “had done, antecedent to his blindness, what he knew to be necessary, previous to poetical excellence. He had acquired extensive learning,” (that is the knowledge of observation, and the communicated knowledge of this Essay; both of which have been shown to depend upon sense.) “He had stored his mind with intellectual treasures:” this is only a classical description of the combinations of sensible ideas, to which allusion has been so frequently made. In less elevated phrases, he had collected together every thing that was essential to the Poet, by the exercise of his own observation, and the observations of others. We find no mention of Genius; and I fearlessly ask for a quotation from the sublime poem of this great master, which cannot be resolved into sensible images; which did not owe its origin to sense.

And whoever will examine the *Iliad*, from the first to the last line of it, will find every sentiment, simile, description, and allusion, either actually to express objects of sense, or to be resolvable into them.

One question may still be asked, by the advocates of Genius. Why two individuals, similarly organized, (admitting such a supposition,) should not proceed alike in the acquisition of knowledge, and the display of Genius? One answer has already been given, in a former part of this Essay; the unequal use, or exercise of those equal powers. And if the question be pressed still further, why that use, or exercise is unequal? I scruple not to affirm, that some accident, some casualty, unnoticed when it occurred, and discovered in its consequence only, is the efficient cause of this difference. "I too am a Painter," was the sudden burst of exclamation, by an humble artist, when he first beheld a finely executed drawing: and but for this circumstance, his emulation might never have been excited, and those equal powers, which afterwards displayed such consummate excellence, might have perished in mediocrity. Even the tale of Cimon and Iphigenia, whether fictitious or real, serves to illustrate this truth. Passion there, accidentally created, gave birth to poetry; which Formey, in his *Belles Letters*, very expressively, calls "the language of passion." The father of Crotch



was a musician; and the exquisitely organized structure of the infant's ear, received, from the performances of the parent, an impression proportioned to that perfection. Had he been born of other parents, he might have resembled "the mute inglorious Milton" of Gray.

There is another peculiarity of some minds, respecting which we hear frequent mention, by those who complain of the want of Genius, viz. want of memory. By what system it was that Pascal remembered every thing he heard, read, or saw, I know not. Neither can I help dissenting from the opinion of the Poet, who declares, that where

"Memory prevails,  
The solid power of understanding fails;"

although Lord Kaines, in his *Elements of Criticism*, has the same thought expressed in prose; for without memory there would be no materials in the mind, upon which the judgment could be exercised: though mere memory, like mere observation, may, doubtless, coexist with great ignorance. But, as I promised to say something upon this subject, in the earlier part of this Essay, I will here briefly redeem that pledge.

What we see with our natural eye, we commonly remember with great fidelity. The dullest boy taken to a "show," will carry away with him, and retain long, much of what he has seen. This

is the great secret of memory. We must *see* every truth, as the boy sees the show; as Hamlet saw his father; "in his mind's eye." He who reads and hears, and *SEES what he reads and hears*, will remember with a tenacity hardly credible. It will be found the best system of mnemonics. Still I beg to reiterate the remark, that here, as well as in conception, judgment, imagination, &c. sense, sense is every thing.

As some readers, perhaps, may be led to conclude, that the distinction between Genius, as a property of the mind; and Genius, as dependent upon a perfect physical organization, is rather verbal than real; I will endeavour, very briefly, to correct that error, by showing the important practical difference between them.

A boy, thought to be devoid of Genius, is now considered as placed almost beyond hope. He is said to have no talent, no capacity; because he learns slowly, and reluctantly, reasons inconclusively, and carries, in his looks and manners, the *appearances* of deficient intellect. On this account, even his companions treat him with contempt: and, as Genius is thought to be the gift of nature, and this gift she has withheld from him, he is, in one sense, abandoned to ignorance, as if born to no other inheritance. But, according to the doctrines of this Essay, he becomes a proper object of discipline. His defects are declared to be physical, and those we have shown to admit of almost



illimitable improvement: here, then, we derive not only hope but encouragement. Let his *senses* be exercised in every way possible, *before* any attempt is made to cultivate his mind. Make him familiar with *things first*, and he will soon become a disciple fit for reason. There may, and doubtless there will be, more trouble required to produce this habitual exercise of the senses, in one thus physically feeble or defective, than in another perfectly organized; but then, application and perseverance will overcome every difficulty; and the labour will be abundantly rewarded in the end. Much of this *praxis* should be performed by parents. It would cost them little toil, and they would every day witness the fruits of it: and in a shorter or longer period, according to the degree of defectiveness of the organs, would behold their child and pupil, become fitted for the tasks of mental discipline, and the hands of the master.

It was most absurd to attempt to educate the sons of Cicero and Chesterfield, as those great men attempted, by learned precepts, and refined doctrines. They should first have introduced them to objects of nature, and of art; have pointed out to them the most remarkable properties of every thing they saw; have shown in what particulars similar objects differed from each other; and then their precepts, and their doctrines, would have found a congenial soil, have flourished in it, and have produced fruit. The consequence of the neglect of this is



well known, and might have been anticipated. Hence we perceive that the distinction is palpable, and the conclusions which result from it most important.

Let us now turn, for one moment, to the perplexing, and almost contradictory observations, made by the justly celebrated Quintilian on the subject of education ; simply because he accredited this phantom Genius. In the introduction to his *Institutes of Eloquence*, he says, "This treatise is no more intended for those who are defective in point of Genius, than a treatise upon the improvement of lands is applicable to *barren ground*. "To *barren ground* ! what a fatal exclusion to a boy that has not these indications of Genius."—But for our consolation he adds, in the sequel of this very paragraph ; "this work will itself be of very little service without a *skilful tutor, obstinate application, with great and continual practice in writing, reading, and speaking*." Here we have the "antidote" to the previous "bane." Poor Genius, even in the estimation of Quintilian, has to submit to the same drudgery, which raises ordinary minds to distinction. It finds no north west passage to the Indies of intellect.

Who ever beheld "*obstinate application, great and continual practice in writing, reading, and speaking, under a skilful tutor,*" in one who was not a Genius? They would certainly create it. But these exercises cannot exist in one who has not first

cultivated his physical organs. I defy a boy to write a single intelligible line without introducing sensible objects; or to read a single paragraph of any author, and understand it, without having previously stored his mind with sensible ideas. *Here* must *begin* his "obstinate application:" reading may succeed this; and writing, according to Pope, though a violator of his own canon, should come last, and should not commence before five and twenty.

Will any one question, after reading this opinion of Quintilian, whether the doctrine of Genius is not most adverse to the cultivation of the mind; whether it does not discourage the exercise of powers which may only lie dormant? and too precipitately confine itself to the nurture of more promising parts? The diamond is commonly concealed in an earthy matrix; and the light reflected by a glittering stone, is not always a proof of intrinsic value. Even Quintilian himself, as if to perfect the confusion and mysticism of this doctrine, says, "*illud ingeniorum velut precox genus non pervenit ad frugem.*" That early unseasonable kind of understanding, bears little fruit.—If we consider the powers to reside in sense, then all is clear again; then the business of education becomes rational, obvious, and full of hope.

But there is another evil, at which we rapidly glanced in the beginning of this Essay, that follows from placing Genius in an innate power of the

mind, instead of considering it as the result of a proper cultivation of the senses.—Emulation is repressed, and slavish imitation is encouraged. For example, amongst other absurdities, every *perfect* epic poem must now contain twelve or twenty-four books; although no better reason can be given for it, than that the works of Homer and Virgil consist of that number; and, if we are told the truth, twenty-four is the legitimate number, to which the *Æneid* itself would have been extended, had the life of Virgil been spared.—And every regular dramatic production must, according to the statutable rules of Criticism, contain five acts.

“*Nemo minor, non sit quintæ productionis actus  
Fœdula quæ posci vult, ac spectata repant.*”

Even much of the detail of composition is fixed by the high sanction of precedent. As Homer had provided Achilles with a richly embossed, and historically descriptive shield, Virgil could do no less for *Æneas*: whilst Milton furnishes one every way worthy of Satan, the hero of his Poem.

In Architecture there must be neither more nor less than five orders: and modern perfection in all its labours, is placed in closeness of resemblance to early examples. This is unworthy the character of intelligence.—Where reason has not proclaimed a law, mankind should be free—and feel themselves free.



What Juvenal says of fortune, may, with equal truth, be affirmed of Genius.

Nos te,

Nos facimus, Fortuna, Deam, cœloque locamus.

except that we bring the idol *from* heaven, and place it in the mind; and bind ourselves, and our children after us, to worship the fictitious creature of our own imagination.

If I did not fear the charge of burdening this Essay with quotations and authorities, to which the subject has already led me, perhaps, too far, I might cite part of the second section of Longinus, and some lines from Horace, to shew with what reluctance those writers yielded to the doctrine of Genius;—and even whilst they, in a subdued tone, admit the existence of this power of the mind, they both concur,

Qui studet optatam cursu contingere metam,  
*Multa tulit fecitque puer; sudavit et aïsit;*  
*Abstinuit Venere et Baccho: qui Pythia cantat*  
*Tibicen, didicit prius extimuitque magistrum.*

Some time ago mankind were amused with the doctrine of faculties, which seem to be twin-sisters of Genius. Every thing depended upon a faculty. As Watts justly ridicules it, a burning glass possest an ustorious faculty; and a wedge was indebted to a cleaving faculty for its mechanical action; one

man had a faculty of speaking, and another a faculty of learning Greek. We now hear of nothing but Genius. One man has a Genius for poetry, another a Genius for eloquence, a third a Genius for the fine arts; we have also mechanical and chemical Geniuses. It is quite preposterous to hear of this family of Geniuses; and it will be well for the rising generation, when they are all buried in the same tomb, where rest the departed faculties in peace.

The only genuine instance of Genius that I have ever seen recorded, is that of Fo or Fohi, one of the greatest philosophers of the Chinese Empire; who in the words of an elegant historian, is said, "as soon as he was born to have stood upright; to have walked seven steps without assistance; and, pointing to the heavens with one hand, and to the earth with the other, to have cried aloud," in the appropriate language of a Genius: "in the heavens and the earth, there is no one but myself who deserves to be honoured." Though some historians say, that this Genius lived almost a century, the object of idolatry, yet, I think I have somewhere read, that, immediately after putting in his high and undisputed claim, he instantly expired, as if the atmosphere of this world, were too chilling for the finer sensibilities of Genius.

From the conclusions drawn in the course of this Essay, we may deduce some important, practical instruction, to direct the education of the mind; whilst

at the same time, we cannot fail to discover from them, the erroneous principles upon which existing systems are founded ; and the reason why so little solid knowledge is acquired under them.

Children are taught as if there was but one power of the mind—memory. Rules are learnt, and operations performed, and passages repeated, without once calling in the aid of Judgment to understand them. I have been acquainted with more than one student, who, after he had quitted the University with his degree, could not put a quadratic equation into terms, because *that* depended upon *judgment* ; but when put into terms for him, could solve it easily ; because *that* process is *mechanical* ; and one I remember, a Senior Wrangler, and a profound mathematician, who was conspicuously remarkable for his deficiency of judgment ; whilst in the rules of analytics he was most expert.

This jejune, impracticable kind of learning, is even fatal to memory itself ; whose power it calls into such frequent use. It unfits it for every object or association but that upon which it has been exercised ; as a horse, long practiced to one pace, can, with difficulty, be brought to any other. And in our best Schools we see memory, which ought to be the companion of judgment, and the hand-maid of knowledge, ever laboriously working by herself, and complaining, like Sisypheus, that the task which she had just performed, returns con-



tinually upon her, and demands a repetition of her toil.

Another error, resulting from the want of sound principles in education, is, that learning resembles a burdensome load, which is borne by the student with impatience; and of which he contrives to relieve himself as speedily as he can. It cannot be said to have cultivated, but to have encumbered the mind: as a huge excrescence on the body, which is supported with pain, renders it feeble and unsightly; whilst knowledge, founded upon judgment, resembles the nice distribution of healthy muscles over every limb, giving fulness, grace, and strength, to every part.

Of education it may be justly affirmed, that it should begin at birth, and end only with life. This thought is beautifully expanded by Addison, in an exquisite piece of reasoning, to prove the immortality of the soul. In infancy, the business of instruction is rendered easy, by the natural avidity of the pupil to learn. Every object that addresses the eye, every sound that delights the ear, in fine, whatever interests the senses, is a lesson; and the parent should provide as great a variety of them as possible. From *things*, the next step is to their representatives—pictures, which, whilst they delight, afford the best instruction; a minute will do more with their aid, than hours without it; however accomplished the teacher may be. At this period no particular care need be exercised to direct

the mind: novelty is a sufficient excitement. But the more extensive the range of sensible objects, the better foundation will be laid for what is, emphatically, called education; and whose business it will be, whenever begun, to work upon, and diligently to increase them; at the same time the mind should be gradually led to make accurate discriminations. One object ought to be compared with another; their points of resemblance and difference be correctly noted; upon which depends definition; the most useful discipline of the mind. Abstract terms must be embodied in their concretes, instead of being learnt from a dictionary *only*; which is ill calculated to create images in the mind of a youth. Thus, bravery will be much better understood by a boy, who has a picture before him, representing an action that is brave, or who hears a description of such action in easy terms, than by any definition whatever. After some practice, in this kind of exercise, he may be led to form associations himself, and to trace them in the writings of others; in which case, it will be incumbent upon him to analyze every complex idea, and to resolve them, with every abstract term, into sensible images. Whilst thus engaged, he may also begin to use his reason; which, in fact, without solicitation, will put forth its powers under such a discipline. It is the want of this kind of exercise, that enervates and sometimes destroys reason, and that also accounts for



the scanty appearances of it in the world. It was, actually, the originating cause of Locke's admirable *Essay on the Understanding*.

If there exist an ambition to produce the nobler fruits of Genius, the student must persevere in these his earlier labours; and super-add to them a continual effort to compound the truths he has acquired, and is daily acquiring, in some new way, so as to lead to an useful, but, hitherto, undiscovered end. And whilst thus engaged, he may hope, from what has been experienced by others, that some accident, some circumstance will occur, to lead his mind to that novelty of combination, called "invention," which is the acknowledged characteristic of Genius. And, to encourage him in this first and last exercise of his senses, let him be taught to know, that there is no sentiment, simile, or beauty in Homer, which cannot be found in nature, either ready formed, or in its elements; no attitude in Phidias, which the human form has not exhibited; no expression in Apelles, which had not its origin in the human countenance; no truth in philosophy, no discovery in art, which has not drawn all its materials from objects around us; and every one of them through the senses.

And now, that the design and conclusions of this *Essay* may be the more clearly understood, I will here, briefly, recapitulate them. First,—That all knowledge is, primarily, derived through the senses; secondly,—that the differences observable among



mankind, as regard intellect, are altogether referable to a difference in the physical organization of the senses, and the different degrees in which they have been exercised; thirdly,—that the different degrees of application, discovered amongst mankind, are nothing more than habits that have arisen out of some early accident, united to a perfect system of sensation; fourthly,—that invention, the great characteristic of Genius, arises from accident, occurring to a mind already stored with knowledge derived from sense, and which, at the time of the accident, was actively engaged in some pursuit or speculation congenial with it; fifthly,—that we know nothing of mind but its existence, and its susceptibility of receiving impressions through the medium of the senses; conception, judgment, memory, &c. being mere states or conditions of mind, and not operations of it; sixthly,—that the senses admit of almost unlimited improvement; and, seventhly,—that, in a practical point of view, it is most important to regard the ability of acquiring knowledge as dependent upon sense.

Whatever may be the consequences of this Essay, or the opinion of the public respecting it; as I have written it from conviction, so I feel a great consolation in its tendency. It prompts emulation where the powers of nature are strong, and encourages exertion and perseverance, where they are weak. It says to all that are about, to

start in the race of education ; proceed ;—if others, swifter than yourself, reach the goal before you, yet know, that after a little longer time, and a little more exertion, you will reach it also ; and if you continue to cultivate, with diligence, your natural powers, you will find your speed daily increase ; and should you, in mature life, be again matched with your former competitors, the prize may be yours.

If, however, any one who reads this Essay, should feel within himself an invincible consciousness of possessing that principle of Genius, which I have attempted to explode, he will only smile at my attempt, and will still triumph in his assured superiority.

THE END.

PROSPECTUS  
OF  
A NEW CALCULUS,

CALLED,

FOR THE SAKE OF DISTINCTION,

THE POTENTIAL CALCULUS,

*Which is applicable to all those Questions that are considered by Writers on the Fluxionary, and Differential and Integral Calculus; and is demonstrated on Principles purely Analytical; being independent of Prime and Ultimate Ratios, Fluxions and Fluents, Differentials and Integrals.*

By W. GRISENTHWAITE.

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THE very extensive application of the Doctrine of Fluxions to questions intimately connected with the business of life, and the very important place it holds in Mathematical Science, render it desirable that the Principles upon which the Doctrine is founded, should be rigidly demonstrable, in order that the conclusions drawn from it may be satisfactory. The nascence and evanescence of quantity, upon which it has hitherto been established, are considerations not only beyond the reach of human speculation, but are almost entirely unconnected with mathematical research: and the subsistence of rationality independently of quantity, is an incomprehensible refinement upon the subtilty of Metaphysics. In the work, of which this is a brief notice, will be explained, whence the errors of the Fluxional and Differential Calculus arose, and the fallacy of the reasoning by which they have been



perpetrated.—Some fundamental errors in the Differential and Integral Calculus, as modified by LA GRANGE, and taught by the French Mathematicians, will also be pointed out; and, as incidental to the Work, the received opinion concerning the *vis inertiae* of matter, and the “*status quiescendi*” of Sir ISAAC NEWTON will be exploded. From the New View of this part of Mechanical Philosophy, several important and curious conclusions will be deduced. The Work will also contain the application of a *new method* of demonstrating the truths of the Fluxional Calculus, independently of Prime and Ultimate ratios—Nascent and Evanescent quantities—Fluxions and Fluents—Differentials and Integrals; and the Author believes, that a student who has passed through an Algebraical course of reading, will find his progress by this method uninterrupted by difficulties, which he has constantly to encounter on the very threshold of the Fluxionary and Differential Calculus. In the course of the Work, the New Theory will be applied to the Rectification of Curves—to the Determination of the Radii of Curvature—to Involutives, and Evolutes—Contrary Flexure of Curves—to Questions *de maximis et minimis*—Logarithms—to finding the Centres of Gravity—Gyration—Oscillation and Percussion of Bodies, and to several interesting Physico-Mathematical Problems—in the course of which will be explained the nature of the questions that admit of a Fluxionary consideration, and the manner of considering them.

The New Theory will also exhibit a view of the Integral Calculus which may become of considerable utility in the integration of differential expressions.

*By the same Author.*

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A NEW THEORY OF AGRICULTURE, in which the Nature of Soils, Crops, and Manures, is explained; many prevailing Prejudices are exploded; and the application of Bones, Gypsum, Lime, Chalk, &c. is determined on Scientific Principles. Second Edition.

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For writing the New Theory of Agriculture, the author received at an Agricultural Meeting at Holkham, in Norfolk, a handsome piece of Plate, from T. W. Coke, Esq. M. P. on which is inscribed "NEW THEORY OF AGRICULTURE."

"It has been also thought, that Salts are favourable to vegetation only in proportion as they hasten the putrefaction of vegetable substances contained in the soil, or attract the humidity of the air. But sulphate of lime is not deliquescent; and if its action consist merely in accelerating putrefaction, why is its beneficial effect confined but to a small number of plants? *Grisenthwaite's New Theory of Agriculture* answers this question, by stating, that as in the principal grain crops which interest the agriculturist, there exists a particular saline substance peculiar to each, so if we turn our attention to the clover and turnips, we shall still find the same discrimination."

*Loudon's Encyclopædia of Gardening, p. 162.*

"Grisenthwaite conjectures, that in many cases in which the blight and mildew attack corn crops, it may be for want of the *peculiar food* requisite for perfecting the grain."

*Loudon.*

"A rotation of crops is unnecessary, according to Grisenthwaite; and in a strict chemical sense, what he asserts cannot be denied. His theory is a refinement on the common idea of the uses of a rotation; but by giving some details of the constituent parts of certain grains, and certain manures, he has presented it in a more clear and striking point of view than has hitherto been done. To apply the Theory in every case, the constituent parts of all manures and of all plants must be known."

*Loudon.*

"That wheat may be grown many years on the same soil by the use of animal manures, or such as contain gluten, Grisenthwaite's Theory would justify us in believing chemically."

*Loudon.*

"There are reasons sufficiently strong, Grisenthwaite observes, to discourage the practice of allowing dung heaps to ferment and rot without interruption."

*Loudon.*

"On the subject of Gypsum, Mr. G. has entered into an explanation of the subject chemically, and encouraged hope of success. He had probably repeated the experiments of Sir H. Davy upon Clover, and also upon Sainfoin, &c.; and it struck his ingenious and scientific mind, that there must be *manures that act specifically*, and can benefit only *certain vegetables*. What he has since written has sufficiently proved the fact."

*Editor of the Farmers' Journal, in a communication to the  
Norwich Mercury.*

"It is to be hoped that Mr. G. will proceed with these investigations, which are so interesting to the theory of Agriculture, and which may ultimately be of considerable benefit to its practice."

*Editor of the Farmers' Journal.*

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A REFUTATION of every Argument brought against the Truth of Christianity, and Revealed Religion, by THOMAS PAINE, in the First Part of his Work, called "The Age of Reason."

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"I did not think it necessary, in the former editions, to mention any names of authors: but as Mr. Taylor, in his Syntagma, makes a mighty vaunting of this omission, I shall specify a few. Grotius, Leland, Paley, and Chalmers, in their works on the general evidences of Christianity; the Second Part of Baxter's Saints' Everlasting Rest, and his Reasons of the Christian Religion; Ditton, Sherlock, West, and Michaelis, on the Resurrection of Jesus; Douglas's Criterion of Miracles. To this list many other impartial and judicious treatises might be added, but surely these are enough. I must, however, mention one work, which is by no means known as its merits deserve, having been published in a remote country town: this is "*A Refutation of every Argument brought against the Truth of Christianity and Revealed Religion, by Thomas Paine, in the First Part of his Work called the Age of Reason: by W. Grisenthwaite.*"

*Extract from the Rev. Dr. Pyc Smith's "Answer" to the  
Rev. Robert Taylor.*















